AMENDMENTS TO THE CLAIMS

The listing of claims below replaces all prior versions of claims in the application.

Listing of Claims:

1 (Canceled)

2 (Currently Amended): An apparatus for improving residual stress of piping, which irradiates an outer surface of a T-piping with a laser beam emitted from a laser head, said T-piping comprising a first piping having one end welded and connected to a tubular circumferential surface of a second piping, and

comprising:

a circumferential-direction position adjusting structure for moving the laser head along a circumferential direction about a tubular axis of the first piping;

a tubular axial-direction position adjusting structure for moving the laser head along a tubular axial direction of the first piping;

a radial-direction position adjusting structure for moving the laser head along a radial direction of the first piping; and

an emission-direction adjusting structure for changing an emission direction of the laser beam in a plane including the tubular axis of the first piping, by changing a direction of the laser head,

wherein the circumferential-direction position adjusting structure includes a rail mounted on a surface of the first piping,

wherein the rail includes a ring shape surrounding a periphery of the first piping,

wherein the circumferential-direction position adjusting structure further includes a cart traveling on the ring-shaped rail as a track,

~~wherein the radial-direction position adjusting structure includes one end facing the first piping,~~

wherein the radial-direction position adjusting structure includes a guide roller ~~provided at the one end thereof, and~~

~~wherein the guide roller makes~~ making a rolling contact with a circumferential surface of the first piping,

wherein the radial-direction position adjusting structure includes a support portion fixed to one end of the tubular axial-direction position adjusting structure, the support portion extending in the radial direction of the first piping and supporting the guide roller at one end thereof, the one end of the support portion facing the first piping, and

wherein the radial-direction position adjusting structure slidingly moves along the radial direction of the first piping, with respect to the support portion.

3 (Currently Amended): An apparatus for improving residual stress of piping, which irradiates an outer surface of a T-piping with a laser beam emitted from a laser head, said T-piping comprising a first piping having one end welded and connected to a tubular circumferential surface of a second piping, and

comprising:

a circumferential-direction position adjusting structure for moving the laser head along a circumferential direction about a tubular axis of the first piping;

a tubular axial-direction position adjusting structure for moving the laser head along a tubular axial direction of the first piping;

a radial-direction position adjusting structure for moving the laser head along a radial direction of the first piping;

a first emission-direction adjusting structure for changing an emission direction of the laser beam in a plane including the tubular axis of the first piping, by changing a direction of the laser head; and

a second emission-direction adjusting structure for changing the emission direction of the laser beam in a plane intersecting the plane including the tubular axis of the first piping, by changing the direction of the laser head,

wherein the circumferential-direction position adjusting structure includes a rail mounted on a surface of the first piping,

wherein the rail includes a ring shape surrounding a periphery of the first piping, and

wherein the circumferential-direction position adjusting structure further includes a cart traveling on the ring-shaped rail as a track,

~~wherein the radial-direction position adjusting structure includes one end facing the first piping,~~

wherein the radial-direction position adjusting structure includes a guide roller ~~provided at the one end thereof, and~~

~~wherein the guide roller makes~~ making a rolling contact with a circumferential surface of the first piping,

wherein the radial-direction position adjusting structure includes a support portion fixed to one end of the tubular axial-direction position adjusting structure, the support portion extending in the radial direction of the first piping and supporting the guide roller at one end thereof, the one end of the support portion facing the first piping, and

wherein the radial-direction position adjusting structure slidingly moves along the radial direction of the first piping, with respect to the support portion.

4 (Previously Presented): The apparatus for improving residual stress of piping according to claim 2 or 3, characterized in that

the laser head is provided in a laser head support portion so as to be moved in an oscillatory manner.

5 (Previously Presented): The apparatus for improving residual stress of piping according to claim 2 or 3, characterized in that

a plurality of the laser heads are provided in a laser head support portion.

6 (Cancelled)

7 (Previously Presented): The apparatus for improving residual stress of piping according to claim 2 or 3, wherein the ring-shaped rail comprises two semi-arcuate rail members.

8 (Previously Presented): The apparatus for improving residual stress of piping according to claim 2 or 3, wherein the cart travels along a circumferential surface of the ring-shaped rail.

9-10 (Canceled)

11 (Currently Amended): The apparatus for improving residual stress of piping according to claim [[9]] 2, wherein the emission-direction adjusting structure includes a slide and an arcuate-shaped piece,

wherein the arcuate-shaped piece is fixed to the radial-direction position adjusting structure and aligned with the plane including the tubular axis of the first piping, and

wherein the slide slidingly moves along the arcuate-shaped piece in an arcuate manner.

12 (Currently Amended): The apparatus for improving residual stress of piping according to claim [[10]] 3, wherein the first emission-direction adjusting structure includes a slide and an arcuate-shaped piece,

wherein the arcuate-shaped piece is fixed to the radial-direction position adjusting structure and aligned with the plane including the tubular axis of the first piping, and

wherein the slide slidingly moves along the arcuate-shaped piece in an arcuate manner.